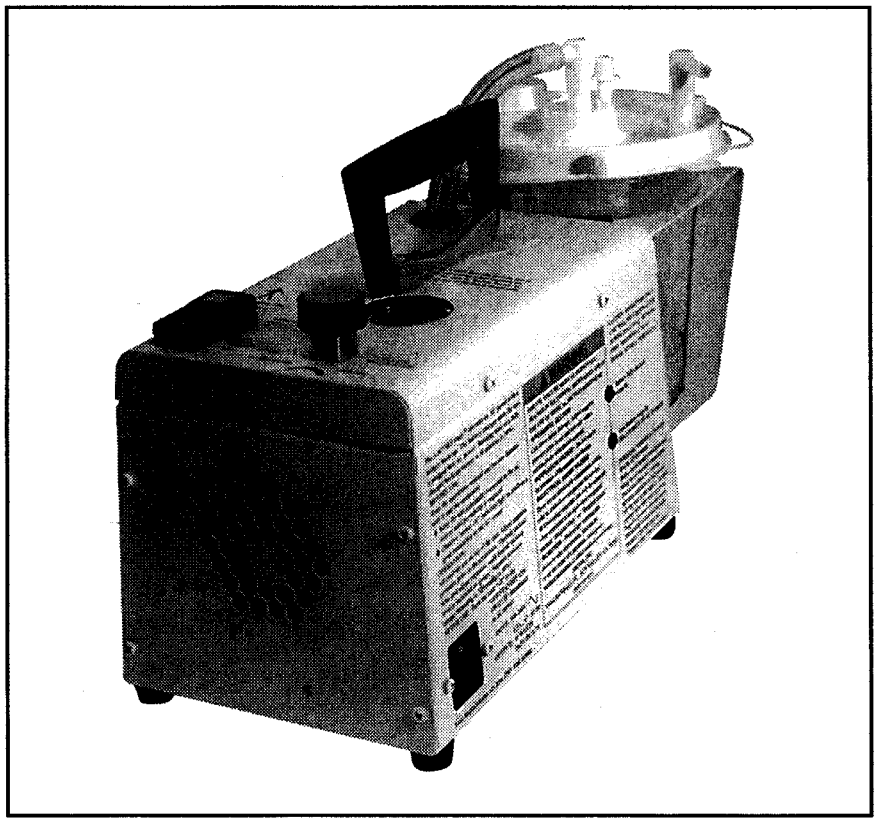
OPERATING INSTRUCTIONS
AND
MAINTENANCE MANUAL

S-SCORT DUET®

MODEL 2014 Rev. A.

AC SUCTION UNIT WITH BATTERY BACK-UP



SSCOR, INC.

11064 Randall Street
Sun Valley, CA 91352
U.S.A.
Tel 818/504-4054
Tel 800/434-5211
Fax 818/504-6032

A suction tip with a thumb control should be used routinely during the procedure.

Federal law restricts this device to sale, distribution, and use by or on the order of a physician, emergency medical technician, or other medical practitioner.

Operator should be thoroughly familiar with these operating instructions before using.

Do not use in the presence of flammable agents or anesthetics.

Turn On the Off/Standby-On power switch before connecting the power cord to AC receptacle to verify operation of the battery back-up. Check the condition of the battery daily.

Connect the power cord to its AC receptacle and observe the indicator lights on the Off/Standby-On switch to verify a good connection. Be sure the unit is connected to the AC power source at all times, except when checking or using the battery as the primary electrical source.

Occlude the patient tube and adjust the regulator to the desired vacuum level. Negative pressures must be preadjusted in anticipation of each procedure.

The shut-off valve in the canister lid will close down when canister is filled with fluids. See "Canister Instructions", Page 16.

Install a new canister before testing for negative pressure over 300mmHg to minimize possibility of implosion, which can occur in instances where a canister is aged or damaged.

Table of Contents

S-SCORT DUET® Model 2014 Rev. A

Caution-Notice	2
General Description & Description of Symbols	4
Description of Features	5-7
Operating Instructions	8
Warning	9
Maintenance	10
Trouble Shooting	11
General Specifications	12
Warranty	13
Internal Access for Electrical, Vacuum Pump, and Filter	14
Electrical Diagrams	15
Canister Instructions	16
Pump Drawing and Parts List	17

S-SCORT DUET® Model 2014 Rev. A

AC Suction unit with Battery Back-Up

U.S. Patent D270948

ETL Listed, conforms to UL STD 2601-1

Conforms to IEC 601-1 and EN 60601-1-2

© 1997 SSCOR, Inc. S-SCORT Duet , HI-D and Big Stick are registered trademarks of SSCOR, Inc.

GENERAL DESCRIPTION

S-SCORT DUET® Model 2014 Rev. A

S-SCORT DUET® is a portable, 100V-240V AC/12V DC Battery Back-up suction pump for constant suctioning for hospital crash cart suction; patient transport; surgi-center back-up suction; emergency medical service; and home health care / nursing homes.

S-SCORT DUET® is powered by an AC to DC Medical Power Supply with a sealed lead acid battery back-up. The battery is charged by an internal dual mode battery charger which is activated when the unit is connected to the AC power source. A fully charged battery will drive the unit for 30 minutes (± 10%).

Toward the end of the effective battery life, the pump will begin to slow down and will shut off automatically before the battery reaches a deep discharge condition. The battery will begin to recharge and the pump will restart as soon as the unit is reconnected to the AC power source. AC charging should bring the battery to a dependable working charge in 6 to 8 hours.

S-SCORT DUET® is designed to provide instant, effective constant suctioning, while connected to AC power as well as being instantly available for emergency procedures which may occur where AC power is not available.

S-SCORT DUET® can be pre-set to be activated immediately upon reaching the distressed patient, with no set up time required during the first few critical minutes of the code.

Suction power is controllable for those instances when full power would be considered harmful to the patient.

All controls are clearly labeled and easily accessible.

S-SCORT DUET® is equipped with a disposable collection canister which features a bacterial filter to screen airborne particulates and a mechanical shut-off valve to prevent fluid overflow.

S-SCORT DUET® exhausts through an in-line filter as a back-up to the bacterial filter in the canister.

DESCRIPTION OF SYMBOLS

S-SCORT DUET® Model 2014 Rev. A

Symbol	Location	Meaning
	Top Cover	Type B Equipment
100 - 240V ∿	Side Panel by Power Input	Alternating Current (100V -240V AC)
⊙	Top Cover	Pump is On
Ȯ	Top Cover	Pump is Off

DESCRIPTION OF FEATURES

S-SCORT DUET® Model 2014 Rev. A

PUMP - High performance diaphragm 12V DC vacuum pump with ball bearing construction. Requires no maintenance under normal conditions. Oil-less, requires no lubrication and produces oil free air. CLINICAL AIRFLOW: 28-30 L.P.M. connected to an AC power source, 25 L.P.M. on a fully charged battery.

REGULATOR - Provides a method for the user to adjust negative pressure. Vents to atmosphere to prevent accumulation of pressures in excess of a predetermined setting. Ranges from less than 50mmHg to over 525mmHg (± 10%).
Note- Atmospheric pressure and altitude can affect negative pressure readings by 20% in extreme situations.

ELECTRICAL - 40W Medical Switcher, Approved to IEC 601-1, VDE 0750, UL 544, CSA 234L3. Globlal AC input ranges 100V-240V AC. EMI compliance meets or exceeds emission requirements of FCC 20870 Class B and VDE 0871 Class B to 30MHz.
The amber indicator light in the Off/Standby-On switch indicates that the AC power source is connected and the battery is charging. An additional green light indicates that the pump is running.
The batteries are sealed lead acid. No acid, vapor or water loss. Can be charged or discharged in any position. Absolutely no "memory" effects as in Ni-Cad.
Fully charged batteries will operate the pump for 30 minutes (± 10 %).

INTERNAL SEALED LEAD ACID BATTERY CHARGER (Part #80524) - Dual level float charger, fully automatic. Soft start shorted cell and circuit protection. Temperature tracking. Minimum battery voltage automatic cut-out circuit. Low battery voltage indicator (Red LED light). AC operation, regardless of battery condition. Battery indicator for full charge (Green LED light). AC Power and Charger "On" indicator on the Off/Standby-On switch. Pump "On" indicator on the Off/Standby-On switch.

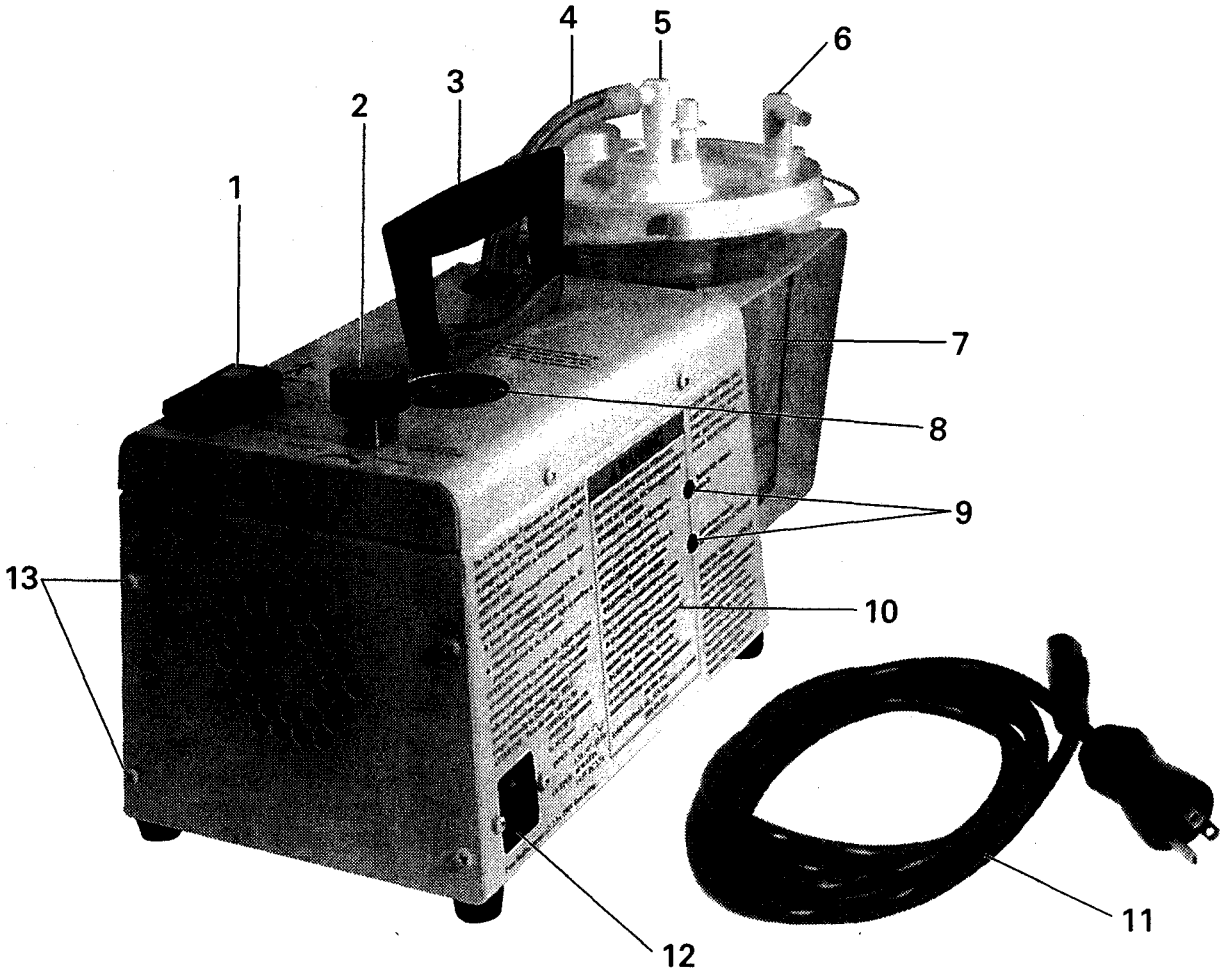
CARRYING CASE - Lightweight, durable aluminum.

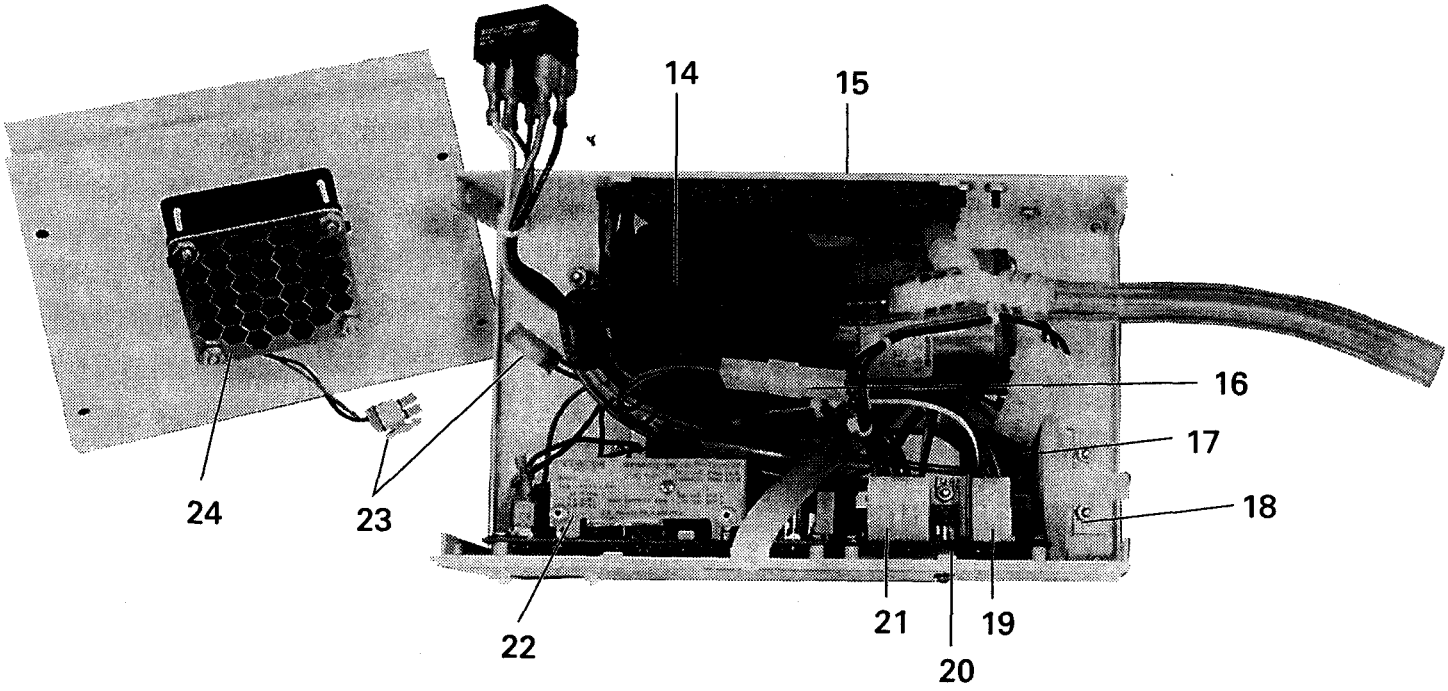
CANISTER COLLECTOR - 1200cc capacity. A bacterial filter screens airborne particulates and a shut-off valve prevents fluid overflow.

EXHAUST FILTER - Glass micro fiber. 99.7% retention of particles. Backs up bacterial filter in the canister.

IMPORTANT FEATURES

S-SCORT DUET® Model 2014 Rev. A.





DESCRIPTION OF FEATURES

S-SCORT DUET® Model 2014 Rev. A

KEY NO.	COMPONENT	FUNCTION
1	Off/Standby-On Switch	Turns unit On or Off and Power indicator lights.
2	Regulator Control	Adjusts negative pressure.
3	Carrying Handle	
4	Vacuum Line	Connects regulator to canister.
5	Vacuum Port	Connects canister to vacuum line.
6	Patient Port	Connects canister to patient tube.
7	Disposable Canister	1200cc, SSCOR Part #48041.
8	Vacuum Gauge	Indicates vacuum level in mmHg.
9	Battery Condition LEDs	Green: Battery fully charged. Red: Battery depleted. Recharge.
10	Operating Instructions	External.
11	AC Power cord	Supplies AC power to unit. Not included with European units.
12	AC cord receptacle	Connects AC power cord to unit.
13	Service Screws	To remove top from base.
14	Pump	Provides vacuum source.
15	Tubing holder	
16	Battery Connection	Quick disconnect.
17	Battery	Backs up AC power supply.
18	Exhaust Filter/Tubing	Screens moisture; change routinely. SSCOR Part #90503
19	6 pin molex connection - switch	Connects Off/Standby-On switch to battery charger
20	PC Board	Controls DC electrical operations (see page 5)
21	9 pin molex connection	Connects components to battery charger
22	Medical Switcher Power Supply	Converts AC input to 14.5V DC output. Runs pump, charges battery.
23	2 pin molex connection - fan	Connects fan to battery charger
24	Exhaust Fan	Cools unit to increase efficiency.

OPERATING INSTRUCTIONS

S-SCORT DUET® Model 2014 Rev. A

Daily Inspection: Establish a daily checklist to assure good performance of the equipment.

1. Confirm that the AC cord is supplying AC power. Check power indicator lights on the Off/Standby-On switch (1).

2. Run the unit. Check that the exhaust fan (24) is working.

3. Check for vacuum, occlude patient tubing.

4. Check the regulator (2), adjust to desired setting.

NOTICE: Read operating instructions on the side of the unit (10) and observe location of the controls (refer to Page 7). Component Key Numbers are indicated within ( )s.

Test battery condition before connecting the AC power cord (11) to the AC electrical outlet by turning the Off/Standby-On switch (1) to the "On" position and observing the negative pressure readings on the gauge (8). With all vacuum connections secure and the patient tube (6) occluded, the negative pressure should reach 300mmHg in two seconds. If it takes longer than two seconds to reach 300mmHg, check the vacuum connections to be sure they are secure.

Connect the AC power cord (11) to the wall outlet and to the AC cord receptacle (12) on the side of the unit. The amber indicator light on the Off/Standby-On switch (1) will confirm a good electrical connection and the battery will be charging. The green indicator light on the Off/Standby-On switch (1) is lit when the pump is running.

The charging circuit is designed to keep the batteries charging or on float as long as the AC power cord is connected to the electrical power source and the amber light on the Off/Standby-On switch is lit. Always keep the Duet™ connected to the electrical power source except for portable use.

BATTERY CONDITION INDICATORS (9)

The green LED on the side panel of the unit, when lit, indicates the battery is fully charged and in the float mode. The red LED indicates the battery is depleted. Recharge the battery immediately when the red LED is lit. If neither LED is lit, this indicates the battery is in good condition but the maximum running time is not assured until the green LED confirms a fully charged battery.

PORTABLE USE

Disconnect the power cord (11) at the receptacle (12) before the Duet is moved from its stand. No change is required in operating procedure during battery operation.

The disconnected unit now has an anticipated running time of 30 minutes (± 10%) on the battery, providing the battery has been fully charged as indicated by the green LED (9). Toward the end of the effective battery life, the pump will begin to slow down and will shut off automatically before the battery reaches a deep discharge condition. The battery will begin to recharge and the pump will restart as soon as the unit is reconnected to the AC power source. AC charging should bring the battery to a dependable working charge in 8 to 12 hours.

Once a week, operate the unit on "Battery Only" for 15 minutes and recharge.

WARNING

S-SCORT DUET® Model 2014 Rev. A

1. For use by Medical Personnel trained in suctioning techniques and in the use of Medical Suction Equipment.

2. The S-SCORT DUET® produces a powerful vacuum. Be sure the regulator is in the low setting when suctioning children and intubated patients.

3. Use a suction catheter with a thumb control when suctioning children and intubated patients. Use a thumb control on all suction tips.

4. Explosion Hazard: Do not use in the presence of flammable anesthetics.

5. Electrical Shock Hazard: There are no serviceable parts within, refer all servicing of electrical systems to qualified service personnel.

6. Where the integrity of the external protective earth conductor arrangement (ground) is in doubt, the unit shall be operated from its internal electrical power source (battery only).

7. Grounding reliability can only be achieved when connected to an equivalent receptacle marked "Hospital Only" or "Hospital Grade".

8. The mechanical shut-off in the canister is designed to close when the canister is filled with fluids. If the vacuum shuts down, empty contents immediately or replace the canister with a new one. Spare canisters are available from SSCOR, Inc. or your dealer.

9. Be sure the lid on the canister is tightened securely to prevent a loss of vacuum at a critical time.

10. Keep S-SCORT DUET® connected to an AC outlet at all times. It may, however, be disconnected for portable use.

11. Do not run the S-SCORT DUET® on AC power if the cooling fan is inoperable.

SPECIAL CAUTION FOR BIOMEDICAL TESTING

12. Install a new canister before testing for negative pressure over 300mmHg to minimize possibility of an implosion which can occur in instances where a canister is aged or damaged.

MAINTENANCE

S-SCORT DUET® Model 2014 Rev. A

Maintenance is minimal, but the pump is designed to suction fluids which can easily contaminate the system if they are not removed immediately.

Immediately following the code procedure, remove the collection canister, dispose of the canister according to established procedure and replace with a new one.

If the code procedure produced an excessive quantity of fluids, check the vacuum line (4) for evidence of moisture. Replace vacuum line if moisture is evident. (Use 5/16" I.D. tubing.)

If the vacuum line has filled completely, it is possible that fluids have reached the pump. Your engineering department can remove the head of the pump to check for moisture. If it is excessive, the unit should be decontaminated and returned to the factory for overhaul (see Page 17 for pump diagram).

Change the exhaust filter (18) on routine inspections and/or whenever fluids or moisture may have bypassed the collection canister.

The amber light on the Off/Standby-On switch (1) merely indicates you have a good connection from the AC power source. The green and red LEDs on the side of the unit (9) indicate the condition of the battery.

When the battery (17) can no longer hold a charge, order battery replacement. Please specify the model number of your pump when ordering a battery replacement (Part #80636).

If the Medical Switcher Power Supply (22) appears defective, return the unit to the factory for repair. Do not attempt to repair the Medical Switcher Power Supply.

If the Internal Dual Mode Charger (20) appears defective, return the unit to the factory for repair. Do not attempt to repair the Internal Dual Mode Charger.

Cleaning - Disconnect AC power prior to cleaning. Use a mild detergent type cleaner. Do not use alcohol, solvents, or cleaning solutions. For interior cleaning, use dry compressed air. The unit should be cleaned as part of the regular maintenance of the unit or sooner if necessary.

For technical assistance, call . . . (800) 434-5211

TROUBLE SHOOTING

S-SCORT DUET® Model 2014 Rev. A

MALFUNCTION	POSSIBLE CAUSE	CORRECTIVE ACTION
Unit does not function when switch is in the "ON" position	Loose connections	Tighten connections
	Battery discharged	Reconnect to AC power
	Battery defective	Reconnect to AC power and Replace Battery
Indicator lights on Off\Standby-On switch do not light.	Fuses are blown	Check fuse at Power supply (22) and input receptacle (12)
	Disconnected from AC power cord	Secure power cord to unit
Unit does not suction when pump is running	Vacuum line loose	Check connections
	Canister defective	Replace Canister
	Canister lid is not tight	Resecure Canister lid
	Thumb vent on suction tip is not occluded	Occlude with thumb
Pump is sluggish	Residual materials have collected in the pump head	Refer to qualified service personnel for cleaning
	Battery is unable to retain a charge	Replace battery (#80636)
	Loose connections	Check connections
	Exhaust filter has occluded	Replace exhaust filter
System shuts down while suctioning heavy particulate matter	Vacuum line clogged at canister lid	Remove connector or canister lid and loosen obstruction
	Float valve has closed	Loosen float valve, empty contents, or replace canister (see Page 16)

GENERAL SPECIFICATIONS

S-SCORT DUET® Model 2014 Rev. A

CHARACTERISTICS		SPECIFICATIONS
Size		16.25"L x 9"H x 6.5"W
Weight		10 pounds
Pump		12V DC oil-less diaphragm. 3.0 Amp. permanent magnet motor. Power to exceed 525mmHg (± 10%) and CLINICAL AIRFLOW: 28-30 L.P.M. connected to an AC power source, 25 L.P.M. on a fully charged battery.
Regulator		Controls negative pressure
Gauge		Calibrated in mmHg. Excessive pressure shaded in red
Power Source		
	Battery	Sealed lead acid, rechargeable 20 hour rate, 12V DC. Charging temperature range 0 degrees centigrade to 40 degrees centigrade.
	Capacity	30 minutes (± 10%) anticipated running time
	Medical Switcher	100V-240V AC, 47-63 Hz single phase, 1.3A. Conforms to UL 544, IEC 601-1, VDE 0750, and CSA 234L3. EMI compliance meets or exceeds emission requirements of FCC 20870 Class B and VDE 0871 Class B to 30MHz. Uses (1) 2A 250V fast acting fuse.
Switch		Off/Standby-On rocker
Receptacle		Uses (2) 2.5A 250V fast acting fuses
Collection Canister		1200cc SSCOR Part #48041
Patient Connecting Tubing		Vinyl tubing 9/32" I.D., 72"L, SSCOR Part #43200 Only use Patient Tubing that meet Biocompatability standards.
Suction Tip		HI-D® "Big Stick®" Large Bore Suction Tip with thumb control. SSCOR Part #44241 Only use Suction Tips that meet Biocompatability standards.

WARRANTY

S-SCORT DUET® Model 2014 Rev. A

SSCOR warrants that each new SSCOR product is free from defects in material and workmanship under normal use and service for a period of one year from date of purchase. If returned to SSCOR, the factory will arrange for repairs or replacement within the terms of the warranty. The defective instrument should be decontaminated and returned properly packaged, postage prepaid. Loss or damage in return shipment to the factory shall be the purchaser's risk.

The warranty shall not apply to any SSCOR product which has been repaired by anyone other than an authorized SSCOR representative, or altered in any way so as, in SSCOR's judgment, to affect its safety or efficacy, nor which has been subject to misuse, negligence, or accident, nor which has had the serial number altered, effaced or removed. Neither shall this warranty apply to any SSCOR product which has been connected otherwise than in accordance with the instructions furnished by SSCOR.

This warranty is in lieu of all other warranties expressed or implied and of all other obligations or liabilities on SSCOR's part, and SSCOR neither assumes, nor authorizes any representative or other persons to assume for it, any other liability in connection with the sale of SSCOR products.

The batteries of the S-SCORT "DUET®" Model 2014 are unconditionally warranted for a period of THREE years from the date of purchase provided the unit is properly charged.

Disposable collection canisters are excluded from this warranty.

INTERNAL ACCESS FOR ELECTRICAL, VACUUM PUMP, AND FILTER

S-SCORT DUET® Model 2014 Rev. A

(WARNING: DO NOT ATTEMPT TO SERVICE THIS EQUIPMENT IF YOU ARE NOT AN AUTHORIZED BIOMEDICAL TECHNICIAN)

Refer to Parts Diagram Page 6 and Electrical Diagram on page 15.

Disconnect the Power Cord at the AC connector (12).

To Replace the Exhaust Filter

Remove Rear Panel for Access to Exhaust Filter

a. Remove the service screws from the rear panel.
b. Disconnect the cooling fan at the Molex connection (23).
c. Replace filter (SSCOR Part #90503).
d. Reconnect cooling fan, replace rear panel and service screws.

Internal Access for Electrical or Pump Service

Remove the top of the unit. (All components are in the bottom.)

a. Remove screws from side, back and front (13).
b. Disconnect the vacuum line from the regulator.
c. Disconnect the Off/Standby-On switch by removing the 6 pin Molex from the Battery Charger (19).
d. Lift top from the bottom.

Component service:

a. Power Supply (22): Do not attempt to service the power supply. Return the unit to the factory for service.
b. Vacuum Pump (14): Do not attempt to service the vacuum pump. Return the unit to the factory for service.
c. Internal Dual Mode Charger (20): Do not attempt to service the Internal Dual Mode Charger. Return the unit to factory for service
d. Battery replacement (17): Remove battery, taking note of the way it is placed in the unit. Position the replacement in the exact same position and reconnect the Molex connection. Dispose of the old battery according to local requirements for the disposal of sealed lead acid batteries.

Reassembly:

a. Reconnect the Off/Standby-On switch wiring to the 6 pin Molex connection of the Battery Charger (19).
b. Reconnect the vacuum line to the regulator.
c. Hold the top in the left hand and thread the vacuum tube (4) up through the grommet hole next to the canister holder at the top.
d. Reposition the top on the bottom and replace the service screws (13).
e. Reconnect cooling fan at molex connections (23) and replace the rear panel.

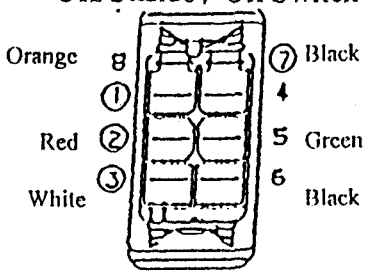
CAUTION

After reassembly, reconnect the unit to AC power. Observe the power indicator lights on the Off/Standby-On switch. Run the unit and confirm negative pressure. Check that the cooling fan is operating.

ELECTRICAL DIAGRAMS

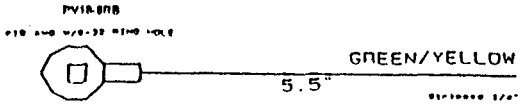
S-SCORT DUET® Model 2014 Rev. A

Off/Standby-On Switch

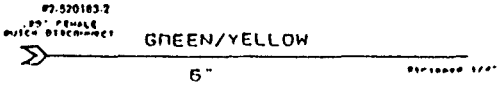


Primary Wiring harness

ITEM 1

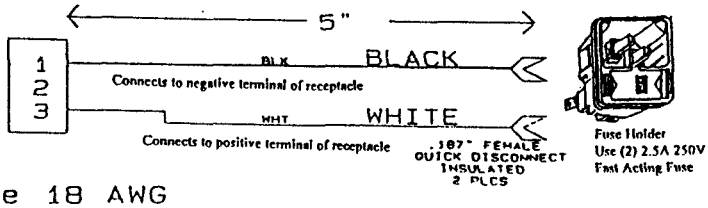


ITEM 2



J3

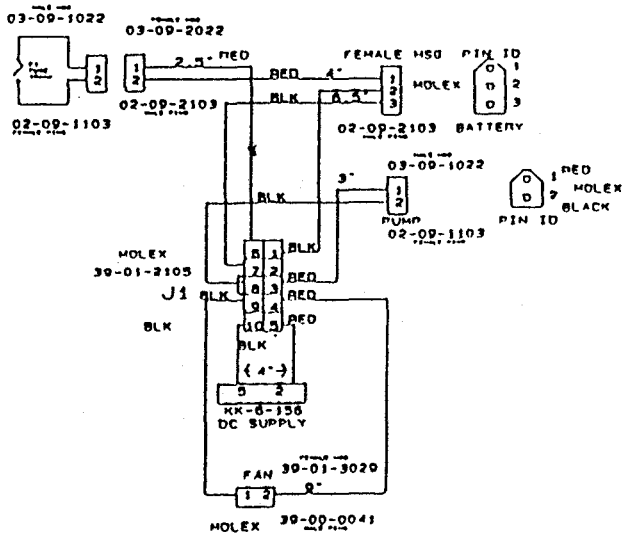
ITEM 3



NOTE: All wires are 18 AWG

#18 UL-1569

Secondary Wiring Harness



SSCOR Inc. will make available upon request component part lists, descriptions or other information which will assist the user's appropriately qualified personnel to repair those parts of the unit which are designated to be repairable.

DISPOSABLE CANISTER

S-SCORT DUET® Model 2014 Rev. A

The S-SCORT® DUET™ utilizes a single patient suction canister.

The canister features a positive shut-off valve and foam guard which will close upon contact with foam or fluid. In addition, a clinically proven bacterial filter screens out potentially hazardous airborne particulates.

WARNING

The mechanical valve in this lid will close when the canister is filled with fluids. Contents will have to be emptied in order to open the valve, or, preferably, the canister should be replaced with a new one. The bacterial filter will lose effectiveness after it has been exposed to fluids.

The canister must be in an upright position to collect fluids.

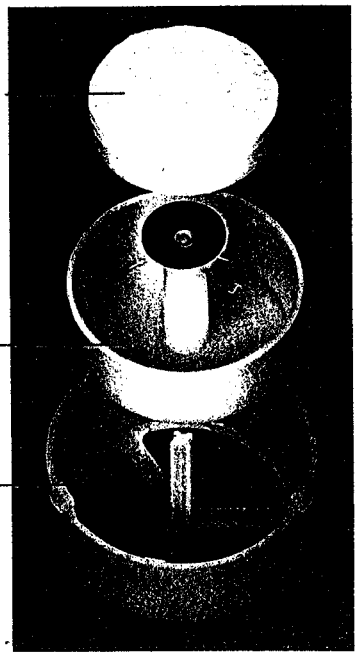
Order new canisters from SSCOR 800/434-5211 or your dealer. SSCOR Part #48041.

Install a new canister before testing for negative pressure over 300mmHg to minimize possibility of implosion, which can occur in instances where a canister is aged or damaged.

Aerostat Hi-Flow Bacterial Filter
Clinically proven filter, 99.99% DOP rated (range 99.95), effectively filters aerosolized microorganisms and particulate matter with an air flow in excess of 1.9 cfm at 180mm mercury, and 0.7 cfm at less than 50mm mercury.

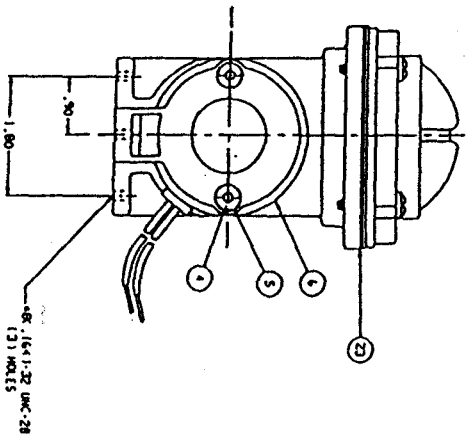
Positive Shut-Off Valve
Closes immediately when fluid reaches top. Soft gasket on float seals tight to prevent fluid overflow.

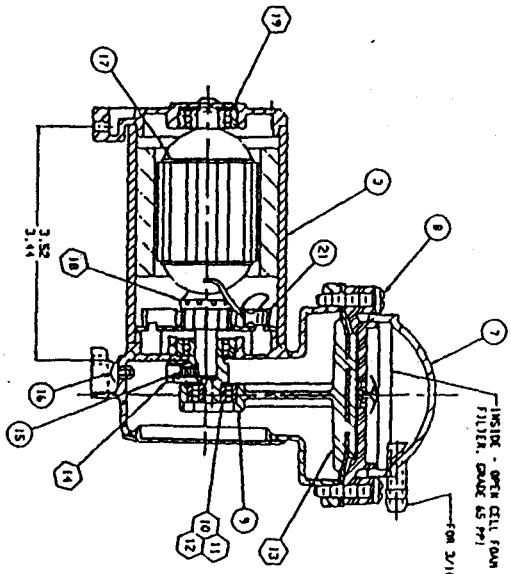
Foam Guard
Keeps float valve securely in place. Prevents premature shut-off.

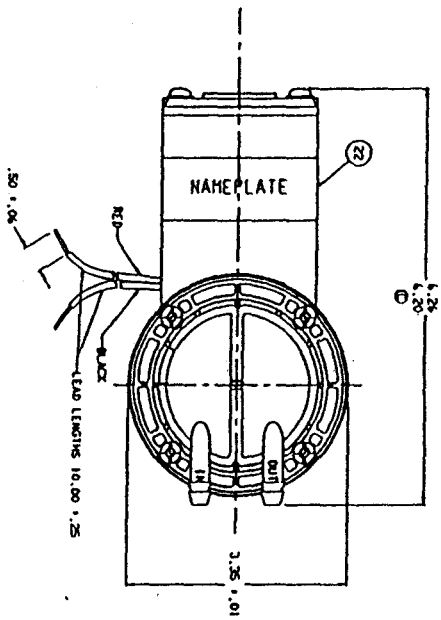


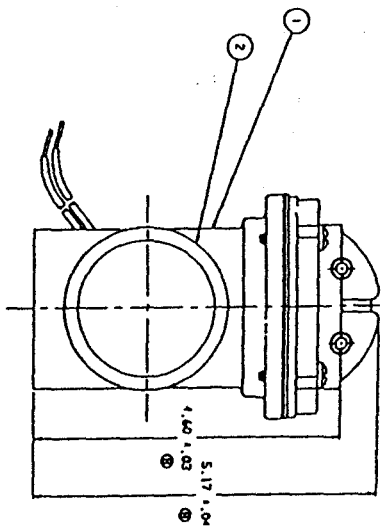
PUMP DRAWING & PARTS LIST

S-SCORT DUET® Model 2014 Rev. A









Item	Part No.	Component	Description	Qty.
1	644258		Housing	1
2	638101		Plug - Snap-In	1
3	802258		Motor Shell & Magnets	1
4	655552		Screw - Housing to Motor (#6-32 x .4")	2
5	826500		Lockwasher	2
6	614809		Motor End Cap	1
7	644398		Head Plate Ass'y.	1
8	655436		Screw - Head Ass'y. to Housing	4
9	646370		Conn. Rod, Bearing & Eccentric Ass'y.	1
10		6491138	Ball Bearing	1
11		631556	Loctite 5980 (Black Max)	A/R
12		631557	Loctite Solvent Solvent	A/R
13		666036	Conn. Rod Ass'y.	1
14		645466	Eccentric	1
15	655449		Set Screw	1
16	622012		Plug Button	1
17	800391		Armature & Bearing Ass'y.	1
18		808715	Armature	1
19		648105	Ball Bearing	2
21	627123		Brush Card Ass'y.	1
22	650348		Nameplate	1
23	615784		Shim	1

Item	Add	Description	Delete
9	666036	Conn. Rod, Bearing & Eccentric Ass'y.	646370
14	645464	Eccentric	645466
24	—	Shim	615784

Item	Add	Description	Delete
7	664382	Head Plate Assembly	644398
9	666279	Connecting Rod, Eccentric & Brg. Ass'y.	646370
13	666278	Connecting Rod Assembly	666036

DECLARATION OF CONFORMITY

SSCOR, Incorporated
11064 Randall Street
Sun Valley, CA 91352
United States of America
Tel: (818) 504-4054
Fax: (818) 504-6032

Type of Equipment:	**AC Powered Portable Aspiration Pump**
Model Name:	**S-SCORT Duet**
Model Type Number:	**2014, 2014-230**

We herewith declare that the above mentioned product meets with the following requirements of the EMC Directive concerning Medical Devices – 93/42/EEC

Safety:	**EN 60601-1: 1990**
EMC:	**EN 60601-1-2: 1993**
Classification	**Type IIA**
Rules of Classification	**Annex 9, Rules 6 & 11**
Annex used for CE Declaration	**Annex VI**
Notified Body	**SEMKO, AB**

Signature, Date: Sam L. Say 8/10/98
Name: **Sam L. Say**
Title: **Chief Executive Officer**

Authorized European Representative

Martin Radnan
Dyna Med U. K.
Unit C1, Brookside Business Park
Greengate, Middleton
Manchester
M245 1GS
U.K.
Phone Number: (4416) 16431230
Fax Number: (4416) 16554508